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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/686,451	10/15/2003	Christopher J. Capece	67,108-022; Capece 2-11	6861

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EXAMINER

STEIN, JULIE E

ART UNIT

PAPER NUMBER

2685

DATE MAILED: 08/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/686,451

Applicant(s)

CAPECE ET AL.

Examiner

Julie E. Stein, Esq.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s). (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1 and 4-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 631 453 A2 to Telia.

Telia teaches all the steps of independent claim 1, including using a neural network for generating a data set. See column 3, lines 46 to 57. Telia does not explicitly teach a method of maintaining time information for a wireless communications base station (abstract), comprising: where said data set provides future time information. However, Telia does teach a method of locating a mobile station in a wireless communication system, in which timing (TA, timing advance) is considered.

See column 2, lines 2 to 10 and column 3, lines 20 to 22. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to understand that the neural network of Telia was generating a data set that provides future time information, as timing is considered in the location computation performed by the neural network. See column 3, lines 20 to 22.

Telia teaches all the steps of claim 4, including gathering time information from an external source (GPS receiver, column 3, line 11); inputting the gathered time information to the neural network (column 3, line 46 to column 4, line 9); and generating the data set based upon the inputted time information (Id.).

Telia also teaches all the steps of claim 5, including wherein the gathered time information extends over a selected period (column 3, lines 9 to 18) and including comparing time information from the data set for a period corresponding to the selected period with the gathered time information; and changing at least one characteristic of the neural network when the data set time information does not correspond to the gathered time information within a selected range (column 3, line 46 to column 4, line 9, this section describes the well known learning process of the neural network).

Telia also teaches all the steps of claim 6, including changing the characteristic of the neural network by changing at least one of a number of layers in the neural network, a number of neurons in the neural network or a complexity factor of the neural network. It would have been obvious to one of ordinary skill in the art at the time the invention was made, to understand that for the neural network to learn, one of the

above characteristics would have to be adjusted as this is a known method of teaching/learning in a neural network.

Telia also teaches all the steps of claim 7, including repeatedly performing the steps of comparing and changing until the data set time information corresponds to the gathered time information within the selected range. *Id.*

4. Claims 2-3 and 8-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Telia as applied to claim 1 above, and further in view of "Test Results and Analysis of a Low Cost Core GPS Receiver for Time Transfer Applications", IEEE International Frequency Control Symposium, J. Blake Bullock et al., pp. 314-322, (1997).

Telia teaches all the steps of claim 2, except wherein the data set is useful for a first time interval and including generating another data set for a second, later time interval. However, Bullock teaches that GPS receivers used for time synchronization, while very accurate, are known to lose their signals due to, for example, jamming as a result of RF interference. See pages 314-315 and 317. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to modify the method of Telia to include generating another data set for a later time interval as it is known that GPS signals may be lost as taught by Bullock (pages 314-315 and 317).

Telia in view of Bullock teaches all the steps of claim 3, including repeatedly generating another data set for subsequent time intervals. See above.

Telia in view of Bullock teaches all the steps of claim 8, including receiving time information from an external source (both Telia and Bullock teach GPS, see above); determining when the external source time information is not available (this is implicit in

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Bullock in view of the teaching that GPS receivers can lose signals); and using the data set for time information when the external source time information is not available (it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the data previously determined when current updated timing data was unavailable because the neural network was continuously learning and comparing the data to GPS data when such data was available. See Telia, column 3, line 46 to column 4, line 9.

Telia in view of Bullock teaches all the steps of claim 9, including using an initialization time value and the data set to generate time information until the external source time information becomes available. Id.

Telia in view of Bullock teaches all the steps of claim 10, including wherein the external source time information comprises GPS time information. See both Telia and Bullock.

Telia in view of Bullock teaches all the steps of claim 11, including wherein the data set comprises a plurality of coefficients for generating future time information based on upon a start time. It would have been obvious to one of ordinary skill in the art at the time the invention was made, to understand that the method of Telia includes a plurality of coefficients (weightings, column 3, line 56) for generating future time information based upon a start time because the neural network has to begin its calculations at a starting point.

Telia in view of Bullock teaches all the steps of claims 12 and 13, including providing at least more than 24 hours are two weeks of future time information using the

data set. It would have been obvious to one of ordinary skill in the art at the time the invention was made, to understand that the choice of how long to provide timing information is one of design choice based on user requirements.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent Nos. 6,708,041 to Butovitsch et al, teaches the concept of future base station time synchronization; 6,456,606 to Tersawa teaches a known GPS system used for base station synchronization; and 6,324,586 to Johnson teaches a computer system that uses GPS signals and a neural network for timing synchronization.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julie E. Stein, Esq. whose telephone number is (571) 272-7897. The examiner can normally be reached on M-F (8:30 am-5:00 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on (571) 272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JES

Nguyen Vo
8/7/2005

NGUYEN T. VO
PRIMARY EXAMINER